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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/759,151	01/16/2001	Yat-Tung Lam	MP0071	2849

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EXAMINER
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KING, JUSTIN

ART UNIT	PAPER NUMBER
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2111

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/759,151

Applicant(s)

LAM ET AL.

Examiner

Justin I. King

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 January 2005.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) See Continuation Sheet is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 19 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

Continuation of Disposition of Claims: Claims pending in the application are 1, 15, 31, 46, 60, 76, 91, 106, 121, 135, 151, 212, and 2, 16, 20, 32, 36, 47, 51, 61, 65, 77, 81, 92, 96, 107, 111, 122, 126, 136, 140, 152, 156, 213, 217, and 9, 23, 39, 54, 68, 84, 99, 114, 129, 143, 159, 220, and 252, 258, 264, 270, 276, 282, 288, 294, 300, 306, 312, 318, 324, 330, 336, 342, 348, 354, 360, 366, and 3-5, 17-19, 33-35, 48, 50, 62, 64, 78, 80, 93, 95, 108, 110, 123, 125, 137, 139, 153, 155, 214, 216 and 8, 22, 38, 53, 67, 83, 98, 113, 128, 142, 158, 219, and 249, 250, 255, 256, 261, 262, 267, 268, 273, 274, 279, 280, 285, 286, 291, 292, 297, 298, 303, 304, 309, 310, 315, 316, 321, 322, 327, 328, 333, 334, 339, 340, 345, 346, 351, 352, 357, 358, 363, 364, 369, 371, 373, 375, and 7, 21, 37, 52, 66, 82, 97, 112, 127, 141, 157, 218 and 10, 24, 40, 55, 69, 85, 100, 115, 130, 144, 160, 221, and 11, 25, 41, 56, 70, 86, 101, 116, 131, 145, 161, 222, and 215, 253, 254, 257, 259, 260, 263, 265, 266, 269, 271, 272, 275, 277, 278, 281, 283, 284, 287, 289, 290, 293, 295, 296, 299, 301, 302, 305, 307, 308, 311, 313, 314, 317, 319, 320, 323, 325, 326, 329, 331, 332, 335, 337, 338, 341, 343, 344, 347, 349, 350, 353, 355, 356, 359, 361, 362, 365, 367, 368, 370, 372, 374, 376.

Continuation of Disposition of Claims: Claims rejected are 1, 15, 31, 46, 60, 76, 91, 106, 121, 135, 151, 212, and 2, 16, 20, 32, 36, 47, 51, 61, 65, 77, 81, 92, 96, 107, 111, 122, 126, 136, 140, 152, 156, 213, 217, and 9, 23, 39, 54, 68, 84, 99, 114, 129, 143, 159, 220, and 252, 258, 264, 270, 276, 282, 288, 294, 300, 306, 312, 318, 324, 330, 336, 342, 348, 354, 360, 366, and 3-5, 17-19, 33-35, 48, 50, 62, 64, 78, 80, 93, 95, 108, 110, 123, 125, 137, 139, 153, 155, 214, 216 and 8, 22, 38, 53, 67, 83, 98, 113, 128, 142, 158, 219, and 249, 250, 255, 256, 261, 262, 267, 268, 273, 274, 279, 280, 285, 286, 291, 292, 297, 298, 303, 304, 309, 310, 315, 316, 321, 322, 327, 328, 333, 334, 339, 340, 345, 346, 351, 352, 357, 358, 363, 364, 369, 371, 373, 375, and 7, 21, 37, 52, 66, 82, 97, 112, 127, 141, 157, 218 and 10, 24, 40, 55, 69, 85, 100, 115, 130, 144, 160, 221, and 11, 25, 41, 56, 70, 86, 101, 116, 131, 145, 161, 222, and 215, 253, 254, 257, 259, 260, 263, 265, 266, 269, 271, 272, 275, 277, 278, 281, 283, 284, 287, 289, 290, 293, 295, 296, 299, 301, 302, 305, 307, 308, 311, 313, 314, 317, 319, 320, 323, 325, 326, 329, 331, 332, 335, 337, 338, 341, 343, 344, 347, 349, 350, 353, 355, 356, 359, 361, 362, 365, 367, 368, 370, 372, 374, 376.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 15, 31, 46, 60, 76, 91, 106, 121, 135, 151, 212, and 2, 6, 16, 20, 32, 36, 47, 51, 61, 65, 77, 81, 92, 96, 107, 111, 122, 126, 136, 140, 152, 156, 213, 217, and 9, 23, 39, 54, 68, 84, 99, 114, 129, 143, 159, 220, and 252, 258, 264, 270, 276, 282, 288, 294, 300, 306, 312, 318, 324, 330, 336, 342, 348, 354, 360, 366 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the admitted prior art and Sharma.

Referring to claims 1, 15, 31, 46, 60, 76, 91, 106, 121, 135, 151, and 212: The prior art discloses a serial control data circuit (figure 1, structure 12) and data circuit (figure 1, structure 14). The prior art does not explicitly disclose the control data signal including information regarding split or non-split. Sharma discloses a method of solving the latency problem in I/O

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operations caused by each device (Column 1, lines 36-37). Sharma teaches one to obtain the data value at the time the request was made and to make forward progress without incurring delay attributable to obtaining the updated value (column 2, lines 15-21), and Sharma teaches an embodiment with splitting transactions (Column 3, lines 51-53). Sharma discloses that it is known to indicate whether the transaction is split or non-split (column 6, lines 35-37). Sharma's means to control the split transaction activities is equivalent to the claimed serial control data signal. Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt the Sharma's teaching onto the prior art because Sharma teaches one how to accommodate the latency in I/O operation with either split or non-split capability.

Referring to claims 2, 6, 16, 20, 32, 36, 47, 51, 61, 65, 77, 81, 92, 96, 107, 111, 122, 126, 136, 140, 152, 156, 213, and 217: Since the split transaction splits transaction into several sessions, the first session is the first split, the last session is the last split, and any sessions in between are the continue splits. Sharma discloses the indication for the split mode (Remark, page 65, 3<sup>rd</sup> paragraph, last 2 lines), the number of requesting bits (Remark, page 65, last paragraph), and unique transaction identifier (column 5, lines 48-50, column 6, lines 20-22). Since Sharma discloses the indication for the split mode, the total number of transmitting bits, and the unique transaction ID, each data receiver/requestor can determine whether the received data is a first split, continue split, or last split.

Referring to claims 9, 23, 39, 54, 68, 84, 99, 114, 129, 143, 159, 220, 252, 258, 264, 270, 276, 282, 288, 294, 300, 306, 312, 318, 324, 330, 336, 342, 348, 354, 360, and 366: The prior art

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discloses the first hardware component is a disk controller and the second hardware component is an I/O channel. Sharma also discloses the hard disk (column 1, lines 20-22).

4. Claims 3-5, 17-19, 33-35, 48, 50, 62, 64, 78, 80, 93, 95, 108, 110, 123, 125, 137, 139, 153, 155, 214, 216 and 8, 22, 38, 53, 67, 83, 98, 113, 128, 142, 158, 219, and 249, 250, 255, 256, 261, 262, 267, 268, 273, 274, 279, 280, 285, 286, 291, 292, 297, 298, 303, 304, 309, 310, 315, 316, 321, 322, 327, 328, 333, 334, 339, 340, 345, 346, 351, 352, 357, 358, 363, 364, 369, 371, 373, 375 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the admitted prior art and Dunn.

Referring to claims 3-5, 17-19, 33-35, 48, 50, 62, 64, 78, 80, 93, 95, 108, 110, 123, 125, 137, 139, 153, 155, 214, 216, 249, 250, 255, 256, 261, 262, 267, 268, 273, 274, 279, 280, 285, 286, 291, 292, 297, 298, 303, 304, 309, 310, 315, 316, 321, 322, 327, 328, 333, 334, 339, 340, 345, 346, 351, 352, 357, 358, 363, 364, 369, 371, 373, 375: The prior art does not explicitly disclose specifying the amount of the data or codeword in each session is a common practice in constructing data packets. Dunn discloses a record format to accommodate different record length. Dunn discloses a data format with fields of PCT CNT and CNT (figure 2). The PCT CNT indicates the number of packets in the block, and CNT indicates the summation of the original length of the supplied records (column 4, lines 4-6). The PCT CNT is equivalent to the claimed code word size of the current sector. Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt Dunn's teaching onto the prior art because Dunn enables one to improve the transmission efficiency by controlling the data amount in each session.

Referring to claims 8, 22, 38, 53, 67, 83, 98, 113, 128, 142, 158, and 219: The prior art does not explicitly claim a ready signal. Dunn discloses a status store for storing/monitoring status for the data processing operations (column 15, lines 40-46); thus, Dunn discloses the ready status/signal when the operation related contingency met.

5. Claims 7, 21, 37, 52, 66, 82, 97, 112, 127, 141, 157, 218 and 10, 24, 40, 55, 69, 85, 100, 115, 130, 144, 160, 221, and 11, 25, 41, 56, 70, 86, 101, 116, 131, 145, 161, 222, and 215, 253, 254, 257, 259, 260, 263, 265, 266, 269, 271, 272, 275, 277, 278, 281, 283, 284, 287, 289, 290, 293, 295, 296, 299, 301, 302, 305, 307, 308, 311, 313, 314, 317, 319, 320, 323, 325, 326, 329, 331, 332, 335, 337, 338, 341, 343, 344, 347, 349, 350, 353, 355, 356, 359, 361, 362, 365, 367, 368, 370, 372, 374, 376 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the admitted prior art, Dunn, and Bliss.

Referring to claims 7, 21, 37, 52, 66, 82, 97, 112, 127, 141, 157, 218, 215, 253, 254, 257, 259, 260, 263, 265, 266, 269, 271, 272, 275, 277, 278, 281, 283, 284, 287, 289, 290, 293, 295, 296, 299, 301, 302, 305, 307, 308, 311, 313, 314, 317, 319, 320, 323, 325, 326, 329, 331, 332, 335, 337, 338, 341, 343, 344, 347, 349, 350, 353, 355, 356, 359, 361, 362, 365, 367, 368, 370, 372, 374, and 376: The prior art does not explicitly disclose the padding data and sync mark. Dunn discloses that the padding data is a known practice to align packet fields (column 4, lines 44-46), so each packet is in a proper predetermined format. Bliss discloses the sync mark is a practice for synchronizing data stream (figure 1B). Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt the teachings of Dunn and Bliss onto the prior art because Dunn enables one to improve the

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transmission accuracy by controlling the packet format in each session and Bliss teaches one to synchronize the data stream with the sync mark.

Referring to claims 10, 24, 40, 55, 69, 85, 100, 115, 130, 144, 160, and 221: Bliss discloses a sync transceiver (figure 4, structure 44) for receiving sync mark.

Referring to claims 11, 25, 41, 56, 70, 86, 101, 116, 131, 145, 161, and 222: Bliss discloses a sync mark in front of the data (figure 1B). Bliss teaches placing the sync mark at the front of a given field for indicating the beginning of the field.

### ***Response to Arguments***

6. In response to Applicant's argument that Sharma is nonanalogous art (Remark, page 62, first paragraph): It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both the alleged invention's claimed limitations and Sharma direct to the I/O operations with the split operations in a computer system. Although Applicant argues that the claimed invention is an interface between a hard disk controller and a R/W channel (Remark, page 60, last paragraph, and page 61, 1<sup>st</sup> and 2<sup>nd</sup> paragraphs), Applicant's claimed limitations from the independent claims are not limited to an interface between a hard disk controller and a R/W channel. Furthermore, Applicant recognizes that Sharma discloses a mechanism for data I/O operation (Remark, page 61, last paragraph, lines 1-3), and Sharma also disclose the hard disk (column 1,



line 22). Thus, Sharma is an analogous art because it teaches an interface to support split operations within the computer system.

7. In response to Applicant's argument that Sharma and the alleged invention have dissimilar and different structures and functions (Remark, page 63, first paragraph): Although the Specification may have disclosed different and dissimilar structures and functions, the claimed limitations do not contain or is not limited the alleged different and dissimilar structures and functions.

8. In response to Applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning (Remark, page 64, 3<sup>rd</sup> paragraph): it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Sharma discloses a method of solving the latency problem in I/O operations caused by each device (Column 1, lines 36-37). Sharma teaches one to obtain the data value at the time the request was made and to make forward progress without incurring delay attributable to obtaining the updated value (column 2, lines 15-21), and Sharma discloses the implemented embodiment with splitting transactions (Column 3, lines 51-53).

9. In response to Applicant's argument that the prior arts do not disclose or suggest a serial control data signal that comprises information that the data is one of first split, continue split, and last split (Remark, page 65, paragraphs 2-4, page 66-68): Sharma discloses that a spit transaction

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is a contiguous-block of data that can span one or more cache lines (Column 3, lines 53-54).

Thus, Sharma's means to control the split transaction activities is equivalent to the claimed serial control data signal. As Applicant correctly points out, Sharma discloses the indication for the split mode (Remark, page 65, 3<sup>rd</sup> paragraph, last 2 lines), the number of requesting bits (Remark, page 65, last paragraph), and a unique transaction identifier. Since Sharma discloses the indication for the split mode, the total number of transmitting bits, and the unique transaction ID, each data receiver/requestor can determine whether the received data is a first split, continue split, or last split.

10. In response to applicant's argument that there is no suggestion to combine the references (Remark, page 68, 3<sup>rd</sup> paragraph): the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Sharma discloses a method of resolving the latency problem in I/O operations caused by each device (Column 1, lines 36-37). Sharma teaches one to obtain the data value at the time the request was made and to make forward progress without incurring delay attributable to obtaining the updated value (column 2, lines 15-21), and Sharma discloses the implemented embodiment with splitting transactions (Column 3, lines 51-53).

11. In response to Applicant's argument on the teaching of the serial control data signal that comprises a codeword size of a current sector (Remark, page 70, last paragraph, page 71, last

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paragraph): Dunn discloses a data format with fields of PCT CNT and CNT (figure 2). The PCT CNT indicates the number of packets in the block, and CNT indicates the summation of the original length of the supplied records (column 4, lines 4-6). The PCT CNT is equivalent to the claimed code word size of the current sector.

12. In response to Applicant's argument that the prior arts do not disclose or suggest a ready transceiver transmitting or receiving a bi-directional ready signal (Remark, page 71, 2<sup>nd</sup> paragraph, page 72, last paragraph): Applicant recognizes that Dunn discloses a plurality of registers for storing the signals, but Applicant argues that the prior art fails disclosing the claimed transceiver transmitting or receiving the signals stored in the registers. Since the prior art discloses the registers for receiving and storing for the signals, the disclosed registers cannot be functional or meaningful if the prior art's embodiment fails providing the means for transmitting or retrieving signals stored in the registers. Such means is equivalent to the claimed transceiver.

***Conclusion***

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

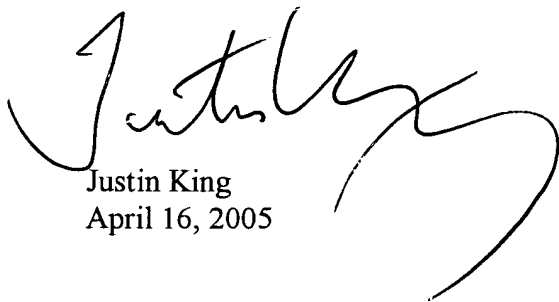
14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin I. King whose telephone number is 571-272-3628. The examiner can normally be reached on max flex. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark H. Rinehart can be reached on 571-272-3632. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

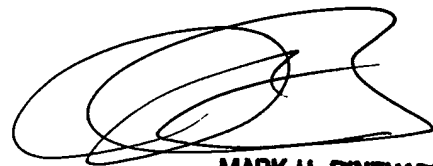
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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lastly, paper copies of cited U.S. patents and U.S. patent application publications will cease to be mailed to applicants with Office actions as of June 2004. Paper copies of foreign patents and non-patent literature will continue to be included with office actions. These cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site ([www.uspto.gov](http://www.uspto.gov)), from the Office of Public Records and from commercial sources. Applicants are referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197 for information on this policy. Requests to restart a period for response due to a missing U.S. patent or patent application publications will not be granted.



Justin King  
April 16, 2005



**MARK H. FINEHART**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2100**